SECTION 15410

PLUMBING PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Pipe and pipe fittings.

B. Valves.

C. Piping Systems within 5 feet of the Building:

1. Sanitary Sewer
2. Domestic Water
3. Storm Water

1.2 REFERENCES

A. ANSI/ASME B16.3: Malleable Iron Threaded Fittings Class 150 NS 300.

B. ANSI/ASME B16.23: Cast Copper Alloy Solder Joint Drainage Fittings DWV.

C. ANSI/ASME B16.29: Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings DWV.

D. ANSI/ASME Sec.9: Welding and Brazing Qualifications.

E. ANSI/ASTM B32: Solder Metal.

F. ANSI/ASTM D2466: Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40.

G. ANSI/AWS D1.1: Structural Welding Code.

H. ASTM A53: Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.

I. ASTM A74: Cast Iron Soil Pipe and Fittings.

J. ASTM A234: Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.

K. ASTM B88: Seamless Copper Water Tube.

L. ASTM D1785: Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120.

M. ASTM D2241: Poly Vinyl Chloride (PVC) Plastic Pipe (SDR-PR).

N. D2683: Socket Type Polyethylene Fillings for Outside Diameter Controlled Polyethylene Pipe.

O. TM D2729: Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings.

P. D2855: Making Solvent Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

Q. F477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

R. 5.8: Brazing Filler Metal.

S. A C601: Standard Methods for the Examination of Water and Waste Water.

1.3 QUALITY ASSURANCE

A. Valves: manufacturer's name and pressure rating marked on valve body.

B. Welding Materials and Procedures; Conform to ASME Code.

C. Welders Certification: In accordance with ANSI/ASME Sec. 9.

1.4 SUBMITTALS: Submit product data under provisions of Section 01300. Include data on pipe materials, pipefittings, valves and accessories.

1.5 DELIVERY, STORAGE, AND HANDLING: Deliver products to site, store and protect products under provisions of Section 01600. Deliver and store valves in shipping containers with labeling in place.

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF THE BUILDING

A. PVC Pipe: ASTM D2729. Fittings: PVC. Joints: ASTM D2855, solvent weld.

2.2 SANITARY SEWER PIPING, ABOVE GRADE

A. PVC Pipe: ASTM D2729. Fittings: PVC. Joints: ASTM D2855, solvent weld.

2.3 WATER PIPING, BURIED WITHIN 5 FEET OF THE BUILDING

A. Copper Tubing: ASTM B88, Type K annealed. Fittings: ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

2.4 WATER PIPING, ABOVE GRADE

A. Copper Tubing: ASTM B88, Type hard drawn. Fittings: ANSI/ASME B16.23, cast brass, or ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

2.5 STORM WATER PIPING, BURIED WITHIN 5 FEET OF THE BUILDING

A. PVC Pipe: ASTM D2729. Fittings: PVC. Joints: ASTM D2855, solvent weld.

2.6 STORM WATER PIPING, ABOVE GRADE

A. PVC Pipe: ASTM D2729. Fittings: PVC. Joints: ASTM D2855, solvent weld.

2.7 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under: 150 psig malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.

B. Pipe Size Over 2 Inches: 150 psig forged steel slip-on flanges for ferrous piping; bronze flanges for copper piping; neoprene gaskets for gas service; 1/16 inch thick pre-formed neoprene bonded to asbestos.

C. Grooved and Shouldered Pipe End Couplings: Malleable iron housing clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; "C" shape composition sealing gasket; steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

PART 3 - EXECUTION

3.1 PREPARATION: Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe for welding. Remove scale and dirt, on inside and outside, before assembly. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient.

C. Install piping to conserve building space and not interfere with use of space.

D. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance for installation of insulation and access to valves and fittings.

G. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 08305: Access Doors.

H. Slope water piping and arrange to drain at low points.

I. Establish elevations of buried piping outside the building to ensure not less than __3 ft of cover.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

K. Establish invert elevations, slopes for drainage to [1/8] inch per foot one percent minimum. Maintain gradients.

3.3 APPLICATIONS

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

D. Install gate, ball, or butterfly valves for shutoff and to isolate equipment, part of systems, or vertical risers.

E. Install globe, ball, or butterfly valves for throttling, bypass, or manual flow control services.

F. Provide spring loaded check valves on discharge of water pumps.

3.4 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Disinfect in accordance with the State of Louisiana State Sanitary Code.

C. Insure pH of water to be treated is between 7.4 and 7.6 by adding alkali caustic soda or soda ash or acid hydrochloric.

D. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

E. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

F. Maintain disinfectant in system for 24 hours.

G. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

H. Flush disinfectant from system until residual equal to that of incoming water or 1. mg/L.

I. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C601.

END OF SECTION